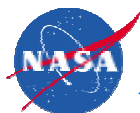
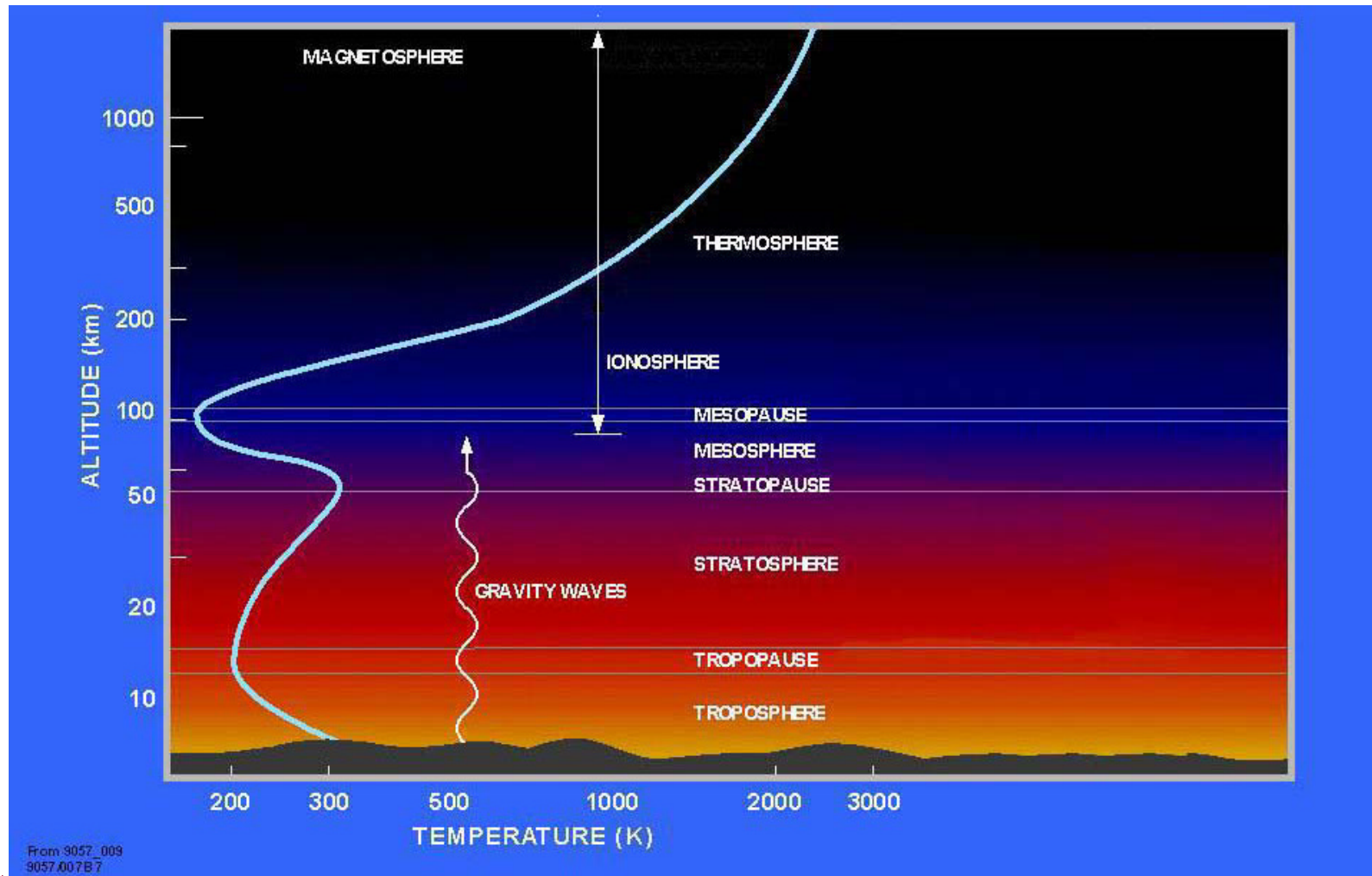




Earth's Atmospheric Shield



GODDARD SPACE FLIGHT CENTER

8/22/00

4-8



Magnetospheric Science

The various layers of geospace respond to solar variability in different ways depending upon their nature and the changes they experience. The magnetosphere is the local region of interplanetary space from which the solar wind is largely excluded by the Earth's magnetic field. It is filled with a very hot, tenuous ionized gas (i.e., a plasma) which is so optically thin that it does not interact with solar radiation in any significant way and is effectively invisible. The magnetosphere is the first line of defense against the energetic charged particles and solar wind plasma directed toward the Earth. However, intense intervals of solar activity, like those producing coronal mass ejections, can result in dramatic increases in the inner magnetosphere's radiation belts and geomagnetic activity. These geomagnetic storms and substorms result in large amounts of energy being transmitted to the upper layers of the atmosphere through energetic particle precipitation and electric currents.

